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ABSTRACT

Syllabi, course outlines, bibliographies, etc., are widely used by college and university teaching faculty as guides for students and to inform reserve collection librarians of required materials. The need to update such bibliographies varies with the subject involved. Under the premise that library school faculties need to repetitively update and evaluate bibliographies and syllabi used in teaching, the repetitive production of these materials was automated with a computer. Thus, bibliographies and syllabi collected from the participating faculty of Indiana University's Graduate Library School were incorporated into a master file and subsequently printed and reproduced for faculty, student and reserve librarian use. The faculty members were enthusiastic about the convenience and flexibility of the computerized updating, however, they questioned the practicality of using a computer for a process which, as it turned out, occurred relatively infrequently. Further research is needed to determine whether correlations exist between a particular subject area and the frequency of the need to update a syllabi and bibliographies used in teaching that subject. (Author/NH)

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Automation for Preparation of Syllabi and Bibliographies for College and University Instruction

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Clayton A. Shepherd
Project Director

January 30, 1970

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I. INTRODUCTION

A. Statement of the problem

Syllabi, reading and study assignments, supplementary reading lists, lists of reference books, selected bibliographies, etc., are commonly prepared and distributed by teaching faculty members in colleges and universities. These lists guide the students in their reading and study and tell them where the materials can be used, provide librarians with notice of materials to place on reserve or to order, and inform faculty and students at other institutions about the emphasis in courses at the originating school.

While the need of all students and faculty members in colleges and universities for continuously updated bibliographies in their own fields seems undisputed, the intensity of the need varies considerably with the subject matter of instruction. The availability of good textbooks with bibliographic references and footnotes eliminates, for many faculty members, the need to prepare updated bibliographies for themselves and for their students, especially at the levels in which the requirements for instruction are clearly defined and the subject content of the courses can be expected to change very little from year to year.

A major premise upon which this project is based has been that the faculty in library schools have intense need for repetitively updated and evaluated bibliographies for the courses which they teach. The objectives of library school facilities are more to acquaint students with the breadth of existing literature and the dynamic character of current publishing than to convey subject information. The objective is to teach them how to use this literature, how to serve the customers of the libraries, how to acquire materials, and how to prepare them for use.

Faculty members have been preparing lists of materials for their students to study for many years; in some cases they have updated these lists each time the courses have been repeated. If the effort of updating is difficult and time-consuming with present manual methods, more sophisticated means of production must be devised.

These reading lists are at the center of a very complex set of relationships which are now held together only in the memory of the individual faculty member. While reliance upon the human brain has excellent results in some respects, it leaves many deficiencies in the production of reading lists and syllabi; these deficiencies ought to be remedied if possible. The factors in these relationships are external to the professor and his school, internal to the professor, and specific to the library situation in his school. For example, the failure to remember a fact accurately, the unwillingness to check the catalog or other source, or uncertainty about the merit of a new item when it is noticed, may have the result that the professor does not consider possible changes in his outline, does not modify a reading or bibliographical reference, or perhaps worst of all, does not make the library's order department aware of the existence of the item. Thus, there are a number of places where the chain of communication can be broken. A failure in communication at any one of these points may delay receipt of the desired item or perhaps make it impossible to obtain it at all.

B. Purposes

The first purpose of this contract has been to automate, so far as possible with a computer, the repetitive production of syllabi, or course outlines and corresponding bibliographies and reading lists. The use of a computer assures that the updating, rearrangement, cross-referencing and printing can be accomplished accurately whenever necessary. Consequently, the faculty can flexibly reorganize a syllabus and its corresponding reading list and maintain accurate cross-referencing between every outline topic and its readings, and vice versa.

The printed syllabi and lists are to serve the instructors, students and reserve collection librarians in their work.

The second purpose is to have the participating faculty experiment with the capability of flexibly reorganizing and updating their syllabi and reading lists by reporting on their experiences and evaluating the most useful ways of using the capability.

II. METHOD

The method selected for the fulfillment of this contract involved the compilation of reading lists and syllabi generated by individual faculty members, their incorporation into a computer master file, and their subsequent printout and reproduction for faculty, student and reserve librarian use. Specifically, the procedures to be used to carry out the goals of the project were specified in the proposal as follows:

1. establish faculty and student requirements for outlines, entries and format;
2. prepare a flowchart of the actions requires;
3. write the computer program from the flowchart;
4. prepare rules for keypunching;
5. keypunch and verify the outlines and entries;
6. print one or more sets of outlines and entries;
7. assess their usefulness to faculty; and
8. devise new uses for the syllabi and bibliographies.

In general, the methodology as outlined above has been followed throughout the duration of this contract. Some of the procedures had been initiated by Mr. C. D. Gull, prior Project Director, and have been continued until termination. Others, however, had not been instituted until October, 1967, when the directorship was transferred to Clayton A. Shepherd who has continued to work toward meeting the stated objectives of the contract.

It can be seen that the methodology employed has been largely empirical in nature: that is, the collection of existing reading lists and syllabi from faculty members of Indiana University's Graduate Library School, their keypunching and inclusion into a master file, and the establishment of a turn-around capability whereby these lists can be updated, reproduced, distributed and evaluated by both faculty and students. Input materials were gathered from various faculty members for several courses in the Graduate Library School curriculum. A list of these courses together with their instructors and the approximate number of students involved is included as Appendix A.

Early in the project it was determined that bibliographic entries should be keypunched in the format established by the Library of Congress in its project MARC, so that maximum capability could be achieved with a system which was to have far-reaching impact in the area of bibliographic communications and library automation. Such a format was, with modification, adopted and keypunching of the various sets of reading lists was accomplished. The card images were then stored on tape for later editing and formatting to be produced by the computer in acceptable output format for classroom distribution.

The facility for continual updating of the lists was provided for by distributing to the participating faculty members tape recorders so that when a significant bibliographic citation would be encountered during the instructor's perusal of literature in fields pertinent to his courses of study he could immediately dictate this citation. The citations could then be transcribed, keypunched and included in the reading list file maintained on the computer.

At the time the present Director assumed control of the project, no reading lists had been produced, although at least two such lists stored in punched card form, specifically those involving courses being taught by the Project Director himself, had been updated on numerous occasions. One of the major problem areas encountered in the project arose from the fact that no adequate programs existed to provide for acceptable computer output of either syllabi or reading lists in page format. In fact, even proof copy produced by the computer was provided to the participating faculty members in either punched card format or as a dump of an early program not intended to produce output for human perusal. It was found that such output inhibited the instructor's willingness to provide proofreading and correcting of the existing lists, certainly an important element in determining their accuracy. It was therefore determined by the present Project Director that a set of computer programs should be written to provide reading lists and syllabi in more acceptable format for both preliminary perusal and final distribution.

We saw, however, that the opportunity existed to distribute a reading list for one course without the use of such a set of programs. This course, within the Graduate Library School curriculum, included a bibliography containing selections for which individual abstracts needed to be written by the students. After discussion with the instructor it became clear that a card format program originally developed by the Library of Congress for the MARC system could be used to produce these references on three by five cards. Thus in February, 1968,a product was generated and distributed to a class in the form of decks of three by five cards containing the citations of the reading list and on the backs of which short abstracts could be written and submitted by the students for evaluation by the instructor. In order for this material to be produced, the MARC three by five print program which had been distributed by the Library of Congress required modification due to lack of complete debugging by the Library of Congress, and also since the punched cards for the course had been produced well over a year ago utilizing a format which was inconsistent with the MARC input requirements. The reading list entries in card format were compiled from the CDC 3600 at the Indiana University Research Computing Center for formatting and pre-editing, then taken to Data Systems and Services and printed out on the IBM 1460 using the modified MARC print program. From the computer output which was printed on plain paper Multilith masters were generated on a Bruning copier located at the printing and duplicating plant where then the card images were run off on eight and one-half by eleven card stock, three card images per page, in sufficient quantity for several classes. This card stock was then trimmed to three by five card size and resulting cards were collated into decks and distributed by the instructor to students.

Realizing, however, that this format was in large measure unacceptable to the majority of participating faculty members, we embarked on a vigorous effort to produce the programs necessary to generate reading lists and syllabi in acceptable format. The systems design phase of this effort was initiated in the spring of 1968, and has resulted in a set of working programs which have successfully produced output in the format desired.

The first step in this design process was to interview each of the faculty members of the Graduate Library School to determine what

reading list format they would find useful and desirable for their various classes. It was found through this interview that a wide variety of needs expressed themselves: in some cases the complete citation, including call number, was desired, with citations arranged in alphabetic sequence; in other cases the faculty member desired the list to be produced in alphabetic sequence within each section of the syllabus and each section indicated by the appropriate outline heading; also, a feature of selectivity was desired -- that is, only various portions of the citation should appear, some desiring the call number and others not; still other faculty members expressed the desire for an arrangement under appropriate subject headings with a citation appearing in the list as many times as there were subject headings assigned to it. In short, a wide variety of different formats was called for: a system of programs needed to be developed with the ability to exercise a number of formatting options through the use of a specification card.

Thus we designed the Reading List and Syllabus Edit and Print System to provide maximum formatting flexibility. Simply stated, this system will select as fields from the citation entry which are to be included in the reading lists, will arrange them in the desired sequence within the citation, will include outline headings or subject headings as desired, will format the material as stipulated by the faculty member, and will print hard copy on eight and one-half by eleven inch paper to be reproduced for distribution to the participating classes. Provision has been made for the inclusion of free text information at the head of the reading list, such as the title of the course, the name of the professor, the date of the course and any other explanatory material which may be stipulated. Detailed specifications for this system appear in Appendix B. A reproduction of a sample page from a reading list produced by the project is included as Appendix C.

By late fall, 1968, the Edit and Print System was operational. We printed several reading lists and immediately distributed them to the appropriate faculty members for editing, revision and updating. At the time of the submission of the second interim report for this project a total of nine reading lists had been produced in proof form and were in the hands of instructors. One of these, for L533, was returned to the project staff in the early spring of 1969 and was successfully reproduced for the class.

An unexpected use for the Edit and Print System was found in the production of a serials holding list for the library serving the Graduate Library School. This list had been manually updated every six months, typed and duplicated by clerical help. However, in 1968 the holdings list was keypunched for input into the Edit and Print System and was generated in multiple copies by the same process as that used for the L533 reading list -- that is, the generating of Multilith masters of high speed printer output and their being run off on standard eight- and one-half by eleven size paper. Approximately two hundred and fifty copies were produced and distributed to the entire student body of the Graduate Library School with several copies being maintained for internal library use.

III. RESULTS

As indicated above, three lists have been produced by the programs developed by the project: one, in three by five format distributed as decks to the students of the participating class; second, in standard eight and one-half by eleven page format; and the third, reflecting the serials holdings of the Graduate Library School made available to the student body at large at Indiana University. In all cases, results have been enthusiastic. Faculty members have found the revised format produced by the Edit and Print System much easier to use for proof-reading and dorrecting purposes, and students have indicated that the lists produced both for L533 and for the library have been quite acceptable, with little or no objection to the stylized print characteristics of the computer high speed printer.

From a production standpoint, the project has been most successful, although numerous bugs were encountered during test phases and also (as is always the case) during initial production phases. The system of programs developed to produce the required output has operated sucessfully.

IV. DISCUSSION

As was noted above, the project achieved operational status in time to generate output which was considered to be quite desirable and acceptable in terms of both utility and format. From the point of view of research, however, results must be stated as being more tentative. While no reason whatsoever exists to lead one to believe that negative findings would be encountered, still, insufficient data was gathered to allow the derivation of meaningful conclusions if one were to apply generally acceptable methodological criteria. The fact that the project was unable to gather sufficient data to completely substantiate or refute its original premises has been centered around circumstances particularly concerned with timing and resource applications. The Office of Education was most generous in granting several extensions to the time this contract has been in effect.

One of the problems often encountered in research of this type oriented toward student activity is found at the beginning of specific semesters; at this time reading lists and syllabi would normally be distributed for evaluation by faculty and students. Specifically, however, circumstances which militated against the more complete gathering of data were as follows:

1) In the early phases of the contract, a great deal of emphasis had been placed on the bibliographic accuracy and completeness of the materials being included in the reading lists for the various courses within the Graduate Library School. This effort had been accomplished by the participation of two highly paid bibliographers, each working approximately twenty hours per week. A great deal of time was being spent on the verification of author, title, imprint, pagination and other bibliographical elements, most of which were provided to the project personnel by the faculty members. By carefully questioning the faculty at a later date, however, we determined: 1) that the bibliographic information turned over to project personnel was with few exceptions already largely correct; 2) that in the opinion of the faculty the painstaking effort being put into verification of the materials was unnecessary, and; 3) that in many cases only partial bibliographic references were desired for the reading lists to be distributed to the students. Therefore, shortly after the assumption of responsibility by the present Project Director, the activities of the two bibliographers were terminated.

2) Although the decision had been made in the early stages of the contract to use the programs which had been developed under Project MARC and provided by the Library of Congress, it was found that with the exception of the three by five card format print program, these programs produced output almost wholly inadequate to fulfill the contract objectives. It became apparent then that a set of computer programs now known as "Reading List and Syllabus Edit and Print System" was needed. As stated above, the design characteristics of this system began to be firmed up in spring of 1968.

3) A major delay was encountered by the removal without warning of the programming support which had been provided by the Research Computing Center for much of the work of this contract. For several months, an RCC staff programmer had been on assignment to this project on a part-time basis; in the spring of 1968 he had begun an examination of the specifications for the Edit and Print System. However, soon

thereafter the Project Director was contacted by Mr. Dale Hall, Director of the Research Computing Center, and was informed that the services of the programmer would no longer be available. This represented a dual setback, no only because the programming support which was being anticipated was suddenly removed, but that a good deal of time had been expended unprofitably in acquainting the programmer at RCC with the planned Edit and Print System immediately prior to his reassignment. This situation precipitated a further difficulty in locating a computer programmer for the project staff. The notorious scarcity of programmers, especially on the IU campus, resulted in the fact that programming could not begin until the summer of 1968.

4) It appeared that the Edit and Print System would become operational in time to produce materials for many of the courses being offered during the spring, 1969 semester. January 1969 in fact saw the system reach operational status. At that time materials for several courses had been stored on magnetic tape ready for processing by the programs. However, because of the time required to process these materials, produce Multilith masters, and duplicate and collate multiple copies, it was obvious that final sets of reading lists would not be ready until after the spring semester had gotten well under way and that no meaningful results could be derived during the spring semester. This realization resulted in an immediate request to the U. S. Office of Education for a one year extension of the contract period so that termination would be changed from 31 May 1969 to 31 May 1970 in order that complete data gathering and evaluation could be accomplished. Word was finally received from the Office of Education by telegram on May 22, 1969 that our contract was not to expire nine days later but was being given a further extension of six months, as the others, at no additional cost to the government. Since notification of contract extension was received only a few weeks prior to the summer school semester, once again we found ourselves confronted with the situation of not being able to generate lists for the coming semester since we had been reluctant to perform significant updating of the materials until word of contract extension had been received.

5) A final setback occurred in the form of a misunderstanding of the amount of funds remaining in the contract budget. These difficulties arose out of a delay in reporting from the University Accounting Offices and the reflection of inadequate pictures of our fiscal status leading to erroneous budget projections. It meant in short that not enough funding was available to carry the project through the fall semester, and that additional funding must be acquired to realize the fullest potential of the work that had been done up to that time. The IU Foundation was contacted and expressed ready willingness to provide deficit funding necessary to prepare for and execute a complete test of the system in the February 1970 semester. It was suggested by the University Contracts Office that without formal extension the Office of Education might yet be prepared to postpone its request for receipt of final report until May 1970 which would provide adequate time for compilation and analysis of data gathered during the early months of the spring semester; this request, however, when submitted to the Office of Education in September 1969, was denied and contract activity ceased.

In reporting the results of this project, however, we must remember that its experimental aspects were primarily concentrated in procedures

7 and 8 listed in the Methodology, that is "assess their usefulness to faculty, students, and reserve librarians," and "devise new uses for the syllabi and bibliographies." We must recognize that during the course of the execution of the project a valuable new use was indeed found in the provision of serials holdings lists of a library for the patrons thereof; similarly, we certainly cannot discount the preliminary impressions gained by producing reading lists for courses on an experimental basis in terms of both faculty and student acceptance.

More importantly, we must recall that the objectives of the contract were "to automate so far as possible with a computer the repetitive production of syllabi or course outlines and corresponding bibliographies and reading lists." This automation program in fact has been accomplished, and the system to provide such service has achieved operational status.

V. CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Experience has shown that the role of the reading list and syllabus in the teaching milieu is indeed a vital one. In the vast majority of normally conducted courses at the university level, both these tools provide essential information for the student in that not only do they provide both an outline of the course in question and its organization to enhance the student's perspective regarding the directions which the course will take during the semester, but also the foundation reading materials often vital to the complete understanding of the subject material.

In preparing such materials for the student, faculty members should be constantly vigilant for new sources of information, just as he must maintain the flexibility to alter the contents of his course as the progress in the field in which he is teaching advances. This dynamic feature of the educational situation demands the ability to make changes in the materials provided to the student when they become necessary. This research project has demonstrated the feasibility of maintaining syllabi and reading lists on the computer and their being generated for faculty and student use. Raw materials for the reading lists were collected; their bibliographic integrity was in large measure accomplished by the activities of expert bibliographers; the materials were keypunched in MARC designated format; computer programs were designed and written which would print out, in standard reading list and syllabus form, a completely edited and formatted array suitable for classroom distribution; and, finally, the computer printouts were reproduced in multiple copies and distributed to students in the participating classes. While it was necessary to terminate the activities of the contract at a time when insufficient opportunity for detailed testing procedures presented itself, nevertheless careful questioning of the faculty members involved and the students has indicated the useful nature of the output materials. Once capability was achieved of providing easily scanned copies for proofreading purposes, the participating faculty members judged the preparatory activity required for final editing and proofreading of the stored information to be quite easy. They were also pleased to find that no laborious retyping of ditto or mimeograph masters was necessary and that the Bruning reproducing device at the university printing and duplicating facility was able to convert the computer output copy into masters; thus this additional burden was removed from the faculty member.

As an extension of the capability to produce reading lists, the computer system developed in this contract activity was able to produce a list of serials holdings currently included in the collection of the library serving the Graduate Library School. Miss Margaret Griffin, the Librarian, also found this capability most convenient. Copies were distributed to the student body at large; several copies were retained to be displayed to be displayed in the library for reference by library patrons. All found the list most helpful, with little objection to the stylized print configuration peculiar to the computer. We must find, therefore, that in both primary and secondary utilization areas the capability of providing these lists has proved convenient.

Several questions were raised, however, during the course of fulfilling the objectives of this project. One of these, as mentioned above, deals with the necessity for insuring bibliographic accuracy of the input

material. It would seem that most of the faculty of the Graduate Library School, being trained librarians, would have placed great emphasis on the precision with which the materials were to be validated by contract staff prior to their being keypunched. Surprisingly, however, this was not the case: the faculty members seemed more interested in flexibility of format than in precision and completeness of references. This is not to say that such matters as correct spelling of an author's name, complete representation of title, and other basic bibliographic elements were not considered necessary; however, many felt that additional information traditionally shown on a catalog card such as that which exists in magnetic form on the MARC tapes would be too detailed for practical classroom use, such items including collation, city of publication, and even in some cases the name of the publisher. In fact, since many of the materials being included in reading lists were those set aside by the instructor in reserve collections, only author and title or possibly author, title, and call number were sufficient to identify the source to be consulted by the student. Therefore, in many cases superfluous data elements were included in the reading list files.

An even more fundamental question was raised: while the convenience of using the computer to update syllabi and reading lists as the content or orientation of a course changes was acknowledged by the participating faculty members, the economic practicality of doing so has yet to be demonstrated. The basic question which must be raised is whether university faculty in fact revises reading lists and course outlines frequently enough to warrant updating by computer, even for those courses which are taught each semester. At first blush, a situation in which a faculty member encounters a new or interesting citation in his readings could pick up a tape recorder and dictate it for inclusion in his reading list would seem quite a boon in maintaining these lists in an up-to-date status. In practice, however, this seemed not to be the case. Several of the faculty members raised the very question which is fundamental to this project: although even a single change in a reading list for a course might mean retyping of the list to be run off and distributed for the new semester, is that task, especially when usually performed by a graduate assistant, so great as to warrant the use of the computer? The question is a penetrating one; when extended to syllabi rather than reading lists, it becomes even more searching, since while specific references may change more frequently, the syllabus, unless it is structured in minute detail, is likely to need updating even less frequently. Thus, while the basic objective -- the feasibility of preparing and updating reading lists and syllabi by computer -- has been met, a question just as significant, that of its practicality, has yet to be answered.

From the experience gained in carrying out this research project we have come to the tentative conclusion that at least in the Graduate Library School, faculty do not have the need for updating reading lists and syllabi with sufficient frequency to warrant the rapid turnaround capability available through the use of the computer. This is not to say that there may not be some areas in which this capability would be more applicable: the courses oriented toward current reference materials in various areas as the humanities, the sciences, and the social sciences, with their need for currency and with the volume of material that must be brought to the attention of the student, and the field of information science, being dynamic and depending so much on the advance of technology, and having an especially high proportion of

research literature. However, the extent to which practicality would permit the computer to be used to provide lists for even these courses is very much open to question, regardless of their usefulness.

We therefore recommend that 1) a research project be conducted to determine the extent to which various types of courses require such capability in the preparation of reading lists and syllabi; and 2) that such research be conducted throughout the university at large to determine what correlation if any exists between such possible requirements and the type of course which is being taught. For example, it may prove that courses at the graduate level require far more dynamic handling of reading lists and syllabi than do those at the undergraduate level. Further, the category in which a course would fall, i.e., the humanities, the sciences, etc., might be a large determining factor as to whether such sophisticated equipment should be employed in providing the students with the tools under discussion. Such a determination could be made through a carefully designed study which would describe both the nature and content of the courses in a university as a whole, rather than restricting its examination to a single highly atypical department. Only after such determination is made could the capabilities developed within this project be further tested in terms of their widespread applicability within the academic environment.

A potentially important new application is being contemplated as an extension of the capability developed in the research project. Fundamental to the objectives of reading list and syllabus distribution is the communication of bibliographic information concerning a course to the students who have enrolled therein. There is no reason to assume that this purpose cannot also be met by other means than the traditional distribution of printed materials to the student in class. All the bibliographic and syllabus information which has been collected during this project now exists in machine readable form, either on punched cards or on magnetic tape. The Graduate Library School is fortunate in maintaining for research and instructional purposes an IBM 2741 remote keyboard which is directly linked to the university Research Computing Center and is operated by the school's Research Center for Library and Information Science. We have proposed that a test sample of the materials collected for this project be placed in a reserve file and maintained on disk at the Computing Center for access by library school students. This material will serve several purposes: for example, the computer could be accessed directly by the student for pertinent bibliographic citations in which he may be interested as an aid in fulfilling the requirements of a given course -- the computer, through selective subject searching, could provide him with pertinent material just as the reading list does, yet screening out unwanted material on a selective basis. The list then becomes a dynamic tool in the hands of the student.

Since the literature within a given subject discipline may tend to be quite homogeneous (although this has not been tested) the items shown in a reading list for one course may in some cases overlap with materials appearing on lists for other courses as well. A greater efficiency would accrue if these lists were combined and were utilized from a subject approach rather than being broken down by course, thus enhancing the complementary nature of the various curricular elements within a university department.

Although not directly related to the aims of this research project, the use of these files as sample retrieval collections would provide a valuable instructional resource for the Graduate Library School in its increasing emphasis on information science. An important phase of the training of library school students consists in the development and structure of retrieval requests, especially in a mechanized selective dissemination system. The files which have been generated by this project are ideally suited to searching by students in a practice situation; at present they could be searched on any of the identifiable fields of the bibliographic citation, such as author, title, date of publication, etc.; with indexing (which could also be done by students), complex search strategies often encountered in retrieval systems could be developed and tested on an on-line basis. The student therefore would gain experience not only in structuring requests but in actually working in a dialogue mode with the computer and its stored files.

VI. SUMMARY

Syllabi and reading lists are commonly prepared and distributed by teaching faculty members in colleges and universities for the purpose of guiding students in their reading and study. Faculty members have been preparing lists of materials for their students for many years; they have updated these lists where necessary each time the courses have been repeated. The effort of updating has been conceived by some to be difficult and time-consuming with present manual methods.

The first purpose of this research effort has been to automate so far as possible with a computer the repetitive production of syllabi or course outlines and the corresponding bibliographies and reading lists, thus assuring that the updating, rearrangment, cross-referencing and printing have been accomplished accurately whenever necessary. The second purpose has been to evaluate the most effective ways of using this capability by having the participating faculty in Indiana University's Graduate Library School experiment with the capability of frequently updating and reorganizing syllabi and reading lists.

The method selected to accomplish the aims of the research project involved the compilation of reading lists and syllabi generated by individual faculty members, their incorporation into a computer master file, and their subsequent printout and reproduction for faculty, student, and reserve librarian use. These materials were collected for fourteen courses in the library school curriculum available to both master's and doctoral students. Timing problems which arose because of the necessity for producing materials for the participating courses at the beginning of each semester limited the number of lists which could be produced; however, a system of programs known as "Reading List and Syllabus Generate and Print" was produced, became operational and generated three major bibliographic lists: two for formal courses and one, an unanticipated application, comprising a list of serials holdings for the Graduate Library School library, copies of which were distributed to the student body at large and also retained in the library for reference use.

Faculty reaction to the lists was enthusiastic, once the initial problems of generating copy for proofreading and editing were solved by the development of the set of computer programs. It was determined that the system indeed provided for ease of updating of the reading lists; the fact that they need not be completely retyped, which might be the case when even one new bibliographic citation would be added to a conventional reading list, appealed to faculty members very much. Multilith masters of the computer printed lists were generated on a Bruning copier, run off in multiple copies and collated by the research project staff, thus providing the faculty member with a complete package.

During the course of this project, it was necessary to assess the needs of the Graduate Library School faculty members in terms of not only their syllabus and reading list requirements, but also the formats in which these teaching tools were to be produced; it was determined that a variety of arrangements would be desirable. Significantly, it was found that almost universally no great need was felt for bibliographic precision or completeness. This is not to say that the faculty members would be happy with misspelled authors, incorrect titles, etc., but that in many cases the requirement simply did not exist for collation infor-

mation or in some cases even name of publisher and city of publication.

Perhaps more significantly, we found that although the participating faculty members found the service which the system provided to be potentially quite convenient, serious questions were raised as to the need for such a powerful tool as the computer in the compilation of reading lists and syllabi, since with few exceptions revision of these lists was a relatively infrequent process. These considerations, coupled with the facts that 1) when reading lists are updated the inclusion of new entries and retyping of master copies for reproduction are for the most part tasks performed by graduate assistants, and 2) these tasks are performed relatively infrequently, bring into sharp focus questions of practicality, especially in the areas of cost justification and equipment utilization.

The premise that faculty members on the whole in a large university need the flexibility and rapid turnaround characteristic of computer equipment has not been established. Further research could well determine whether differences in such needs occur with differences in types of courses within a particular department and with subject fields or disciplines within the university curriculum.

VII. APPENDIXES

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LIST OF GRADUATE LIBRARY SCHOOL COURSES FOR WHICH READING LIST AND SYLLABUS MATERIAL WAS COLLECTED

Course No.	Course Name	No. Enrolled 2nd Semester 1968-69	Instructor
L508	Library Services and Collections	46	Sheviak
L516	Communication Media and Libraries	38	McMullen
L525	Literature of the Social Sciences	38	Painter
L533	Library Materials for Children and Young Adults	58	Sheviak
L544	Introduction to the Information Sciences	50	Pratt
L553	The Library in the Modern School	11	Armstrong
L557	Library Services for Children and Young Adults	20	Sheviak
L558	Management of Libraries and Information Centers	46	Lowell
L583	Advanced Cataloging and Classification	9	Painter
L584	Technical Services	*	Painter
L596	Library Practice Work	20	Griffin
L605	Education for Librarianship	*	Rufsvold
L644	Information Storage and Retrieval--Methods and Techniques	16	Shepherd
L645	Systems Analysis and Design	*	Shepherd

* Not currently offered, scheduled for either Summer Session 1969 or Fall, 1969-70.

APPENDIX B

PROGRAM SPECIFICATIONS FOR READING LIST AND SYLLABUS GENERATE AND PRINT SYSTEM

General Description

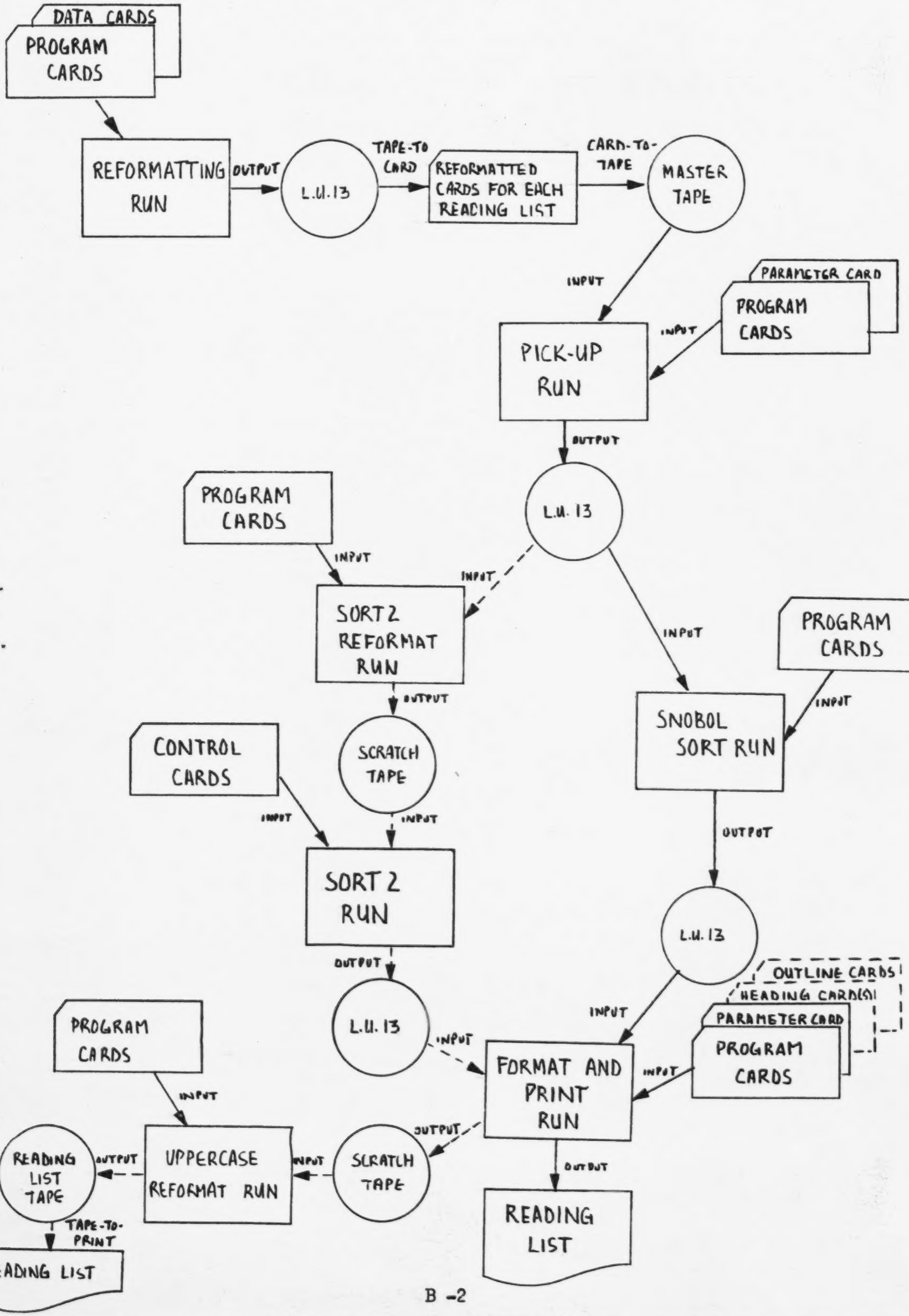
The purpose of this system is to produce a reading list in standard format on 8½ x 11 paper, using as source MARC formatted records for various courses with which we are dealing in this research project. It has been designed to utilize a Master File (Tape) made up of card images for each course, to process materials for a specific course contained on that Master File and to produce a reading list on the high speed printer. It is designed so as to provide the maximum number of options to the faculty member so that he may choose which fields from the complete citation are to appear in the final entry and in what order. Further, he has a formatting option as well as the capability of specifying boldfacing of one or more fields within a record.

Each pass through the system is designed to produce a reading list for a single course. If more than one course requires a reading list, a separate pass through the system is required for each.

The system is also set up so that a trial reading list can be output without taking data from the Master File. In this case, output from the Reformatting Run is input directly into the Format and Print Run. The reading list can then be checked for any errors in the original input data.

Of the various runs within the system, the following are completely operative programs: Reformatting Run (SNOBOL3), Pick-up Run (SNOBOL3), Sort 2 Reformat Run (SNOBOL4), SNOBOL3 Sort Run, Format and Print Run (COMPASS).

READING LIST GENERATOR SYSTEM



REFORMATTING RUN

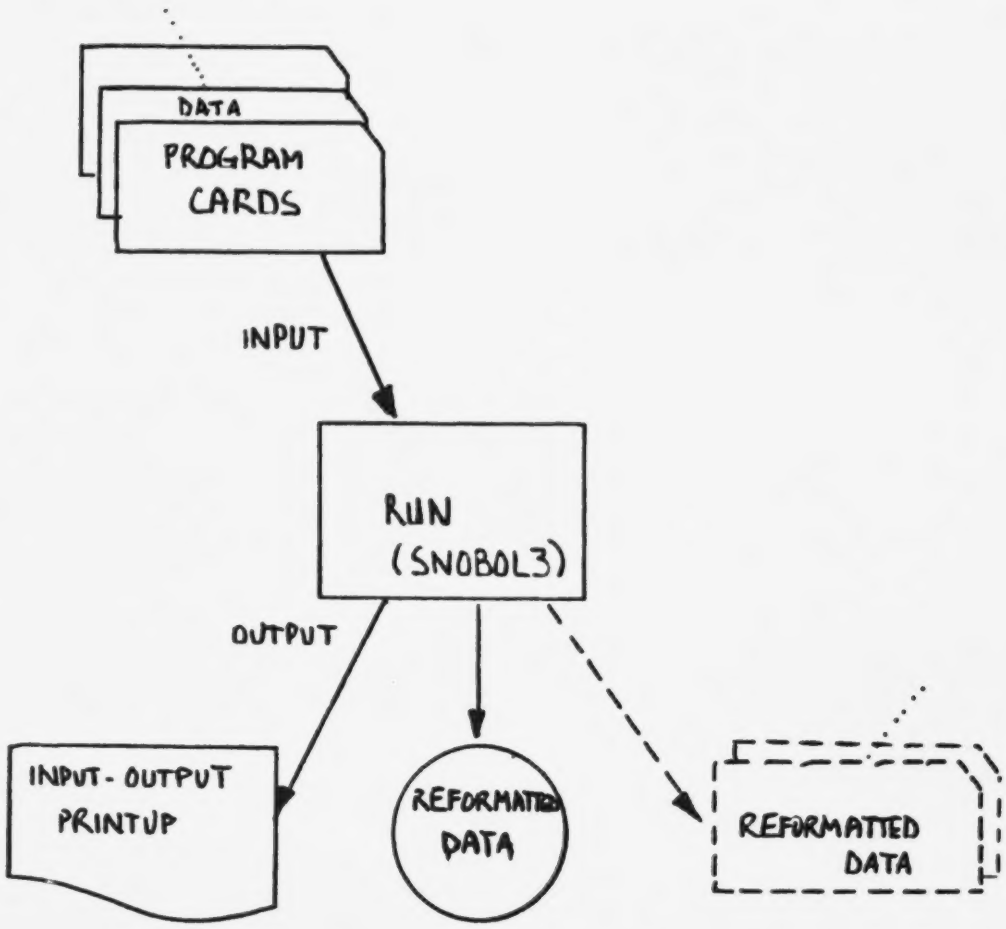
The purpose of this run is to reformat the punched data so that a standard format occurs for each entry and for each field within an entry. Also duplication of entries which have more than one tag 96 field takes place.

Standardization involves the following:

1. Course number appears as the first 5 characters of the entry, in pure BCD numeric, rather than alphanumeric form, e.g., L565 becomes 43565;
2. If outline numbers occur in the tag 96 fields, they are formatted into a 5-digit numeral without decimal point and occur both in the tag 96 field and as the second 5 characters of the entry, following the course number, e.g., 2.1 becomes 02100;
3. All tag numbers are checked to be sure a double slash occurs before each;
4. Tag numbers in the 70's are dropped and their fields are carried with the previous field;
5. Tag numbers with their fields are ordered as follows: 10, 20, 25, 30, 40, 45, 50, 51, 60, 65, 80, 94, 90, 96;
6. Duplication of entries takes place where more than one tag 96 field occurs in the original entry. Each new entry will contain only one of the tag 96 fields and a duplication of the rest of the entry. In duplication the correct course number and/or outline number will be inserted in the correct position at the beginning of the entry.

Tape output from this program can be input directly into the Pick-up Run, as well as the Format and Print Run. The program for the run is written in SNOBOL3, so the tape is punched in card-image. Thus, if a master tape is to be built out of data from more than one program, the output tape from each of the reformatting runs can be punched onto cards, and when all such runs are completed, the cards can be put all at once on the master tape. The master tape would then be available for any future runs terminating in a reading list, so that the reformatting run would not have to be used unnecessarily.

REFORMATTING RUN

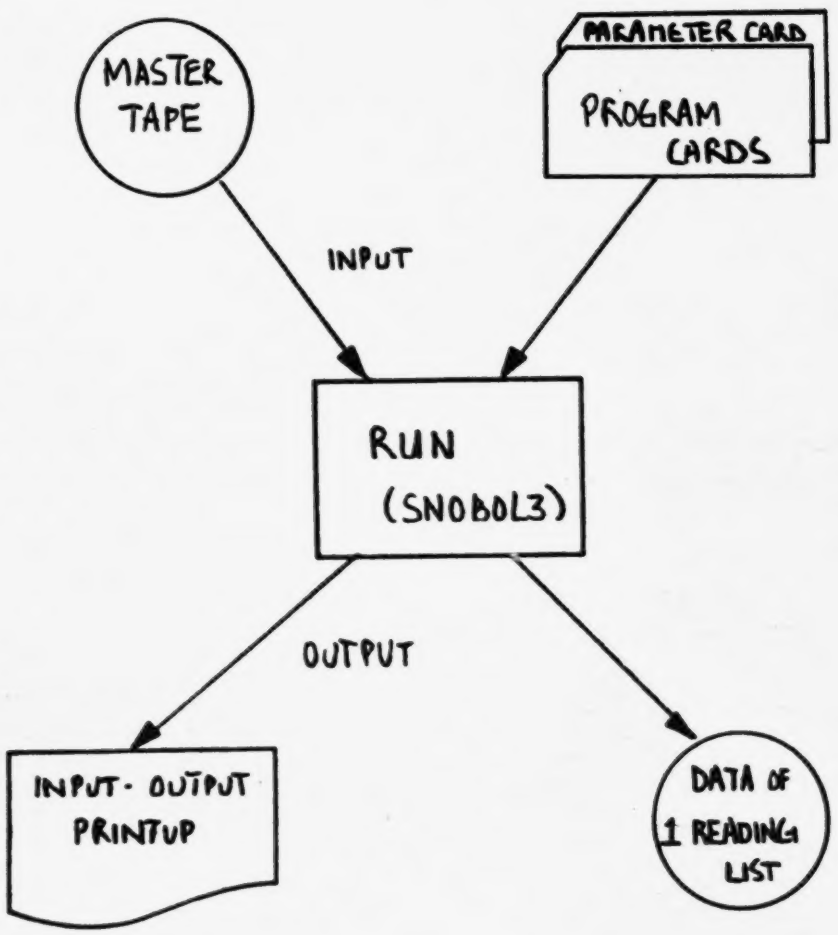


PICK-UP RUN

The purpose of this run is to pick up all and only those entries of a specified course from either the master tape or from the output tape of the reformatting run. The program is written in SNOBOL3, which gives as output a tape punched in card image. The output tape is rewound at the end of the program, so that the job can continue immediately with either the sort run or the format and print run if a sort is not necessary.

Due to the fact that the data has been reformatted in a specific way by the reformatting run, the program can easily pick up the desired entries. Each complete entry is picked up off the master tape (or other tape) and the first five characters are matched against the course number which appears on the parameter card which is input after the program cards. On a match, the course number is chopped off the beginning of the entry and the entry is then output, on a scratch tape if the sort run or other run will follow immediately on the same job, on an output tape otherwise.

PICK-UP RUN


MASTER TAPE
PARAMETER CARD
PROGRAM CARDS
INPUT
RUN (SNOBOL3)
OUTPUT
INPUT · OUTPUT PRINTUP
DATA OF 1 READING LIST

SORT RUN

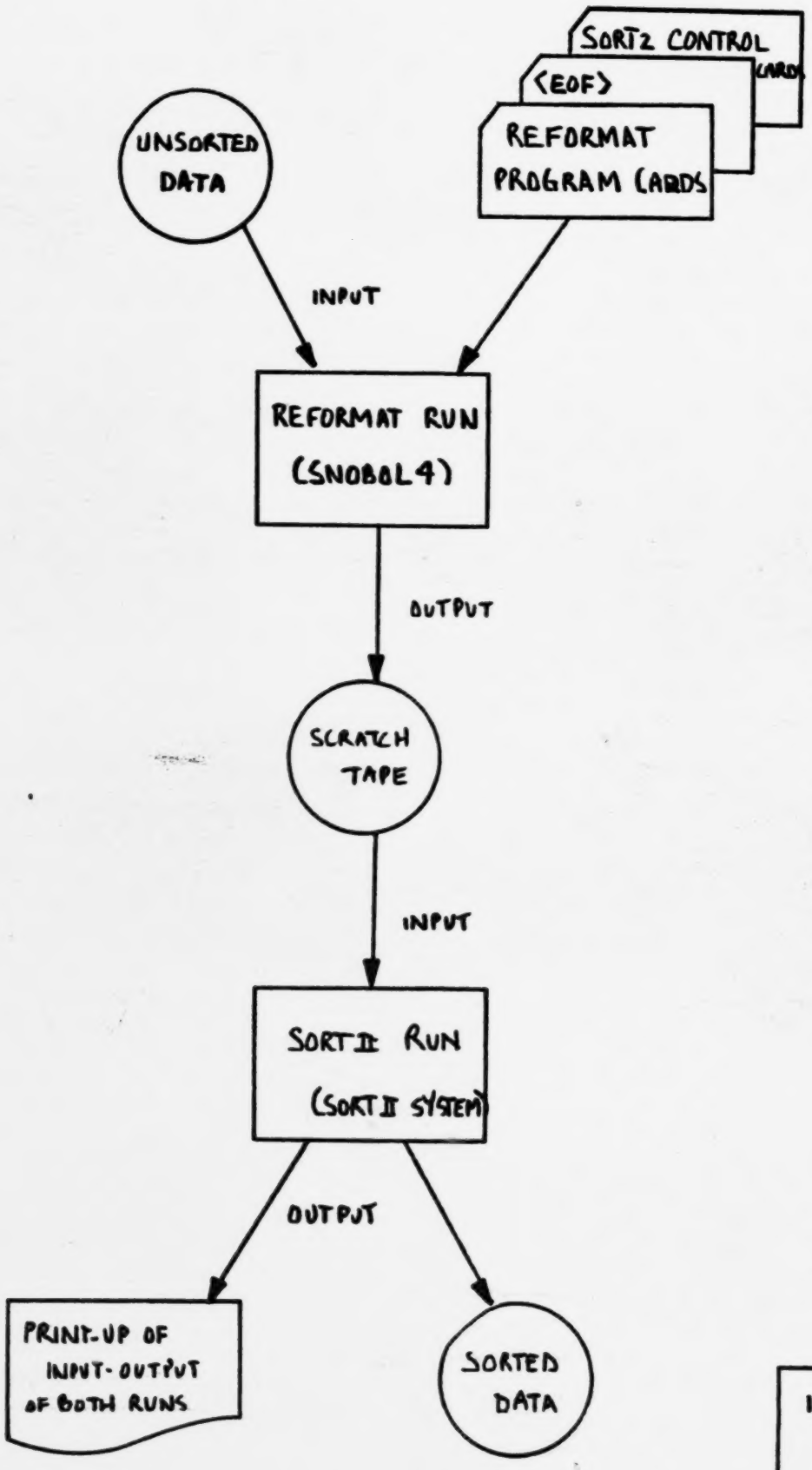
The purpose of the Sort Run is to arrange the records in proper sequence for processing by the Format and Print Run. It can be by-passed only when all entries of a reading list are in the desired order. This may be the case, for instance, if output data from the reformatting run is input immediately into the Format and Print Run, the proper order having been maintained from the beginning. Although the Master Tape may be maintained in main entry sequence for each course, this is not necessarily the case unless the reformatted cards of the first run have been manually ordered before they are put on the Master Tape.

If outline entries are to be included in the reading list, the outline number which appears as the first five characters of each record (after the pick-up run) will serve as the primary sort key. Other secondary sort keys may be specified, whether the run is made with the SNOBOL3 program or the SORT II system. Primarily arrangement by main entry within outline heading (tag 10 field, or tag 20 field where no tag 10 field occurs) would be the most frequent arrangement. Other options, however, are open.

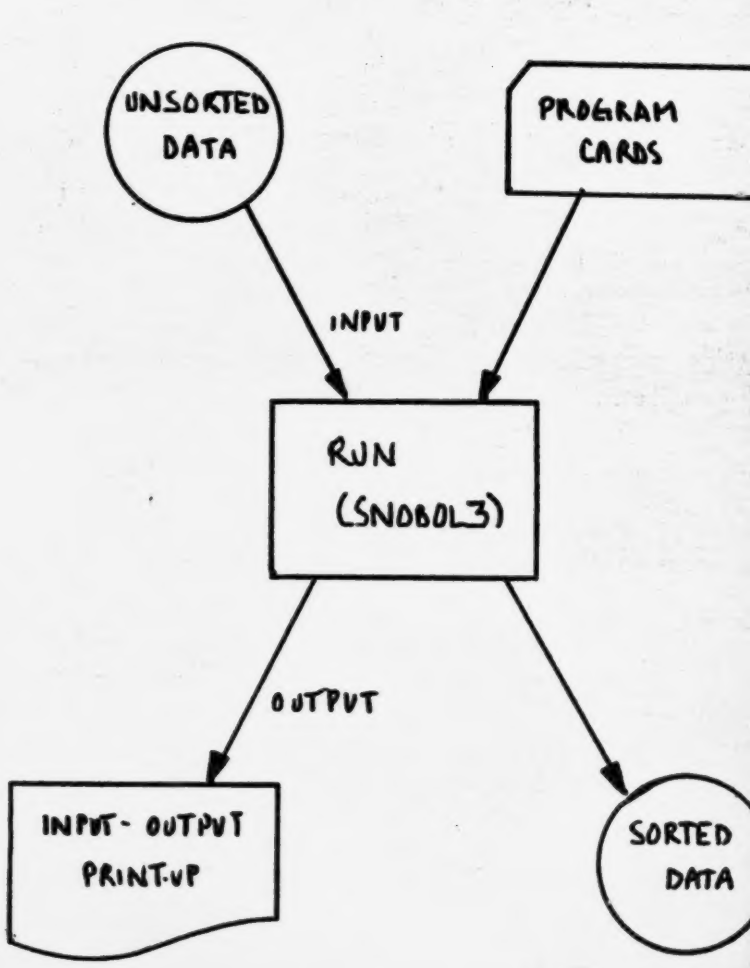
There are two possible program set-ups for the Sort Run. For smaller lists there is the SNOBOL3 sort program, which can accept input immediately from the pick-up run. Because of this a scratch tape may be equipped for the pick-up run output/sort run input. Output from the SNOBOL3 sort program is also immediately available for input into the Format and Print Run.

For longer reading lists and for those with more complicated sort keys desired, the SORT II system is available. Reformatting of the data must take place both before and after this sort run, due to the necessities of the SORT II system. The Sort 2 reformat run is used to place each logical record in one physical record, instead of in several 80-character long physical records, and to place the size of the logical record in the first 3 character positions of each logical record. Sort keys are designated in the control cards. A second reformat run after the SORT II run is necessary in order to replace the data in card-image on the tape.

SORT2 REFORMAT RUN + SORT2 RUN



SNOBOL SORT RUN



FORMAT AND PRINT RUN

The purpose of the Format and Print Run is to select those fields from the citation entry which are to be included on the reading list, to arrange them in the desired sequence within the citation, to include outline headings as desired, to format the material as stipulated by the faculty member (for the program, by the parameter card), and to print hard copy on plain paper, at present, on standard high speed printer paper which can be trimmed to size. This output is then reproduced by multilith process and distributed to the appropriate classes. Provision is made for the inclusion of free text information at the head of the reading list, such as the name of the course, the name of the professor, the date of the course, and any other explanatory or "header" material which may be stipulated. This material is provided the program by the inclusion of several "heading cards" which immediately follow the parameter card in the program deck.

The basic logic of the program is to handle the material one tag field at a time, arranging it appropriately on the page in relation to its accompanying fields. This is accomplished in the sub-routine Field Move and Print (FMP). It is controlled by a higher level sub-routine, Citation Process (CP), which is concerned with the citation itself, including the selection of the appropriate fields within the citation and calling upon FMP to process them in the proper format. CP is in turn a sub-routine of the main program, Format and Print, which has the control functions of page formatting and deciding whether enough room is left on the page for a complete citation, or in the case of an outline heading list, whether enough room is left on the page for the heading plus at least one complete citation.

Thus the Format and Print program is a hierarchy of routines, one to control the format of the reading list itself; the second to handle each citation in turn; and the third to handle each field within a citation.

The provision for printing outline headings is also handled by Format and Print program, by setting up the heading as if it were a single field citation: that is, formatting it along with character count and other necessary sub-fields so that FMP can handle it without additional programming. Outline headings are input on cards, following whatever heading cards there are.

A layout of the parameter card is attached.

PARAMETER CARD - READING-LIST GENERATION

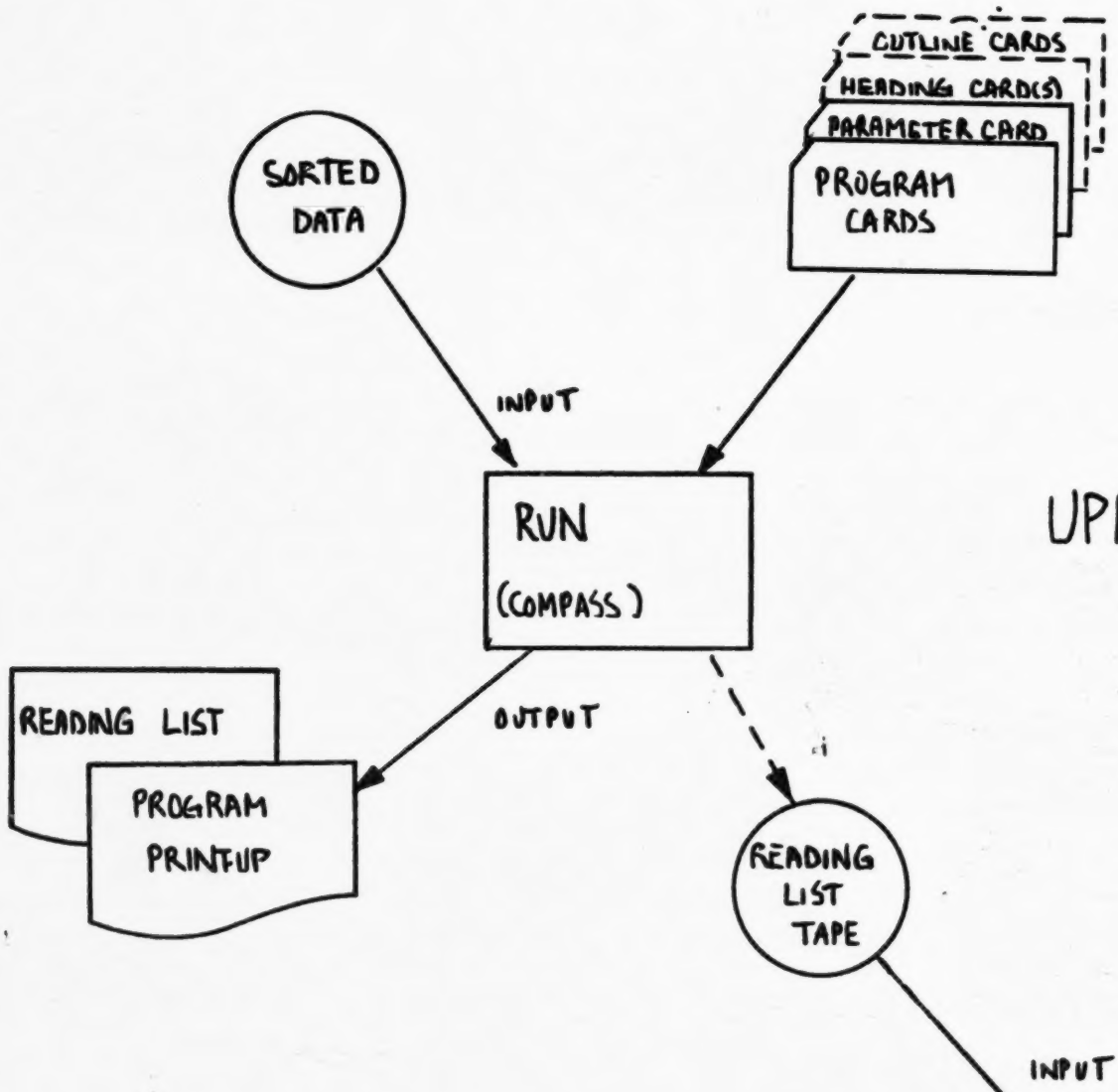
The purpose of the parameter card is to provde the various options desired by the faculty member so that they can be operative within the Format and Print Program. The parameter card will contain the following items:

Elements	Columns	
1. The number of heading cards	3-4	
2. Type of list	5	
a. Regular		punch 1
b. Outline entry		punch 2
3. Boldface option for outline entry headings	6	punch 1
4. Course number	7-10	
5. Field select and format	n to n+3 (from 11)	
a. Field (tag #)		n to n+1
b. Format		n+2
c. Boldface		n+3, punch 1

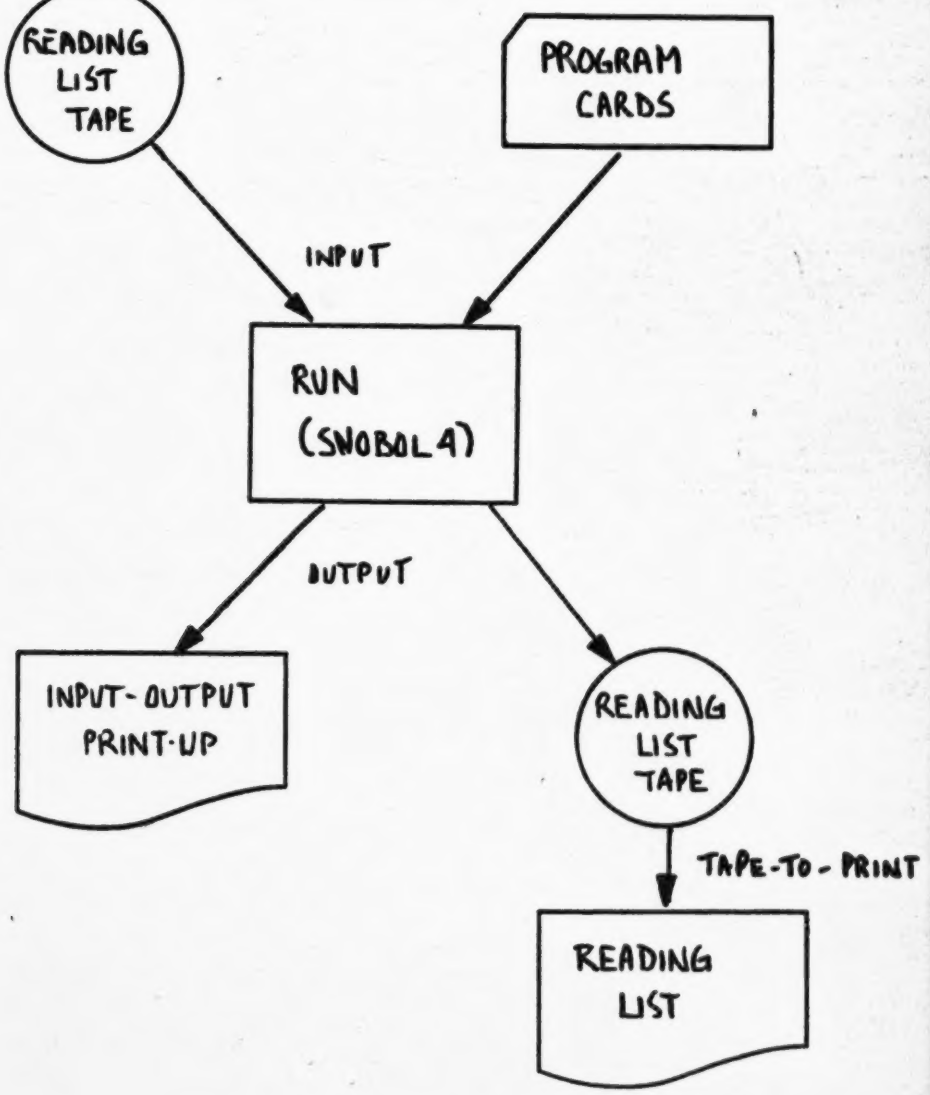
The specific fields within the citation to be selected and the format in which they are to appear are indicated in groups of four columns, n to n+3, immediately following column 10, in the order in which these fields are to appear in the final print. Presently the fields selected must be a subset of the ordering imposed in the Reformatting Run. Column n+2 will contain the format information by containing one of the following punches:

0 - no special positioning;
1 - field to start on a new line, left justified with other fields to follow on the same line;
2 - field to begin on a new line, left justified, but to appear alone on the line;
3 - field to appear on a new line, to be indented five spaces and to contain other fields on that line;
4 - field to begin a new line, to be indented five spaces but to stand alone on that line;
5 - field to be right justified, and to appear alone on line.

FORMAT AND PRINT RUN



UPPERCASE REFORMAT RUN



UPPERCASE REFORMAT RUN

The purpose of this program is simply to take the output of the Format and Print Run and insert the uppercase character in front of each alphanumeric grouping of characters which begins with a letter. Output on tape can then be printed on a high-speed printer having upper-lower case facilities.

SAMPLE READING LIST PAGE PRODUCED BY SYSTEM

WILSON, BARBARA KER.
NOEL STREATFEILD. NEW YORK, HENRY Z. WALCK, 1964. 64P.
PR6037.T75Z93 GLS

02000 SELECTION AIDS.

HAVILAND, VIRGINIA.
CHILDREN'S LITERATURE, A GUIDE TO REFERENCE SOURCES. WASHINGTON, LIBRARY OF CONGRESS, 1966. 341P.
Z1002.H3 GLS

JACOBS, LELAND B., ED.
USING LITERATURE WITH YOUNG CHILDREN. NEW YORK, TEACHERS COLLEGE COLUMBIA UNIVERSITY, 1965.
LB1575.J17 ; GLS, ED.RR

02100 BASIC TOOLS.

AMERICAN LIBRARY ASSOCIATION. CHILDREN'S SERVICES DIVISION.
SELECTED LISTS OF CHILDREN'S BOOKS AND RECORDINGS. WASHINGTON, U.S. OFFICE OF ECONOMIC OPPORTUNITY, 1966. 48P.
REF. Z1037.A1A5 GLS

AMERICAN LIBRARY ASSOCIATION.
BASIC BOOK COLLECTION FOR HIGH SCHOOLS. 7TH. ED. CHICAGO, AMERICAN LIBRARY ASSOCIATION, 1963. 184P.
REF. Z1037.B255 1963 GLS

AMERICAN LIBRARY ASSOCIATION.
BOOKS FOR CHILDREN 1960-1965 AND SUPPLEMENTS. CHICAGO, AMERICAN LIBRARY ASSOCIATION, 1966. 447P.
REF. Z1037.B723 GLS

AMERICAN LIBRARY ASSOCIATION. EDITORIAL COMMITTEE.
BASIC BOOK COLLECTION FOR JUNIOR HIGH SCHOOLS. 3RD. ED. CHICAGO, AMERICAN LIBRARY ASSOCIATION, 1960. 136P.
REF. Z1037.A53 GLS